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Conservation of Marine Otters

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Marine-living otters occur along the temperate/boreal coasts of all continents except Australia. Two species (*Enhydra lutris*—the sea otter and *Lutra felina*—the chungungo or sea cat) live exclusively in marine habitats whereas several other species (*Lutra canadensis*—the Canadian otter *L. lutra*—the Eurasian otter; *L. provocax*—the southern river otter; and *Anoyx capensis*—the Cape clawless otter), which live primarily in fresh water habitats, have given rise to marine-living populations. The purposes of this paper are to (1) summarize available information on the distribution, status, and threats to marine otters, and (2) identify research and management needs for the conservation of these species and populations. Most of the information presented was taken from IUCN's Action Plan for the Conservation of Otters, or from correspondence with authors of the Plan.

Species and Populations

Sea otter (*Enydra lutris*). The sea otter once ranged across the Pacific rim from northern Japan to the Pacific coast of central Baja California (Kenyon, 1969). Following near-extinction from overexploitation during the 18th and 19th centuries, sea otter populations have recovered steadily in the 20th century. The species currently occupies most of its historical range from Asia to the northeast Gulf of Alaska. Populations have been reestablished via relocations in southeast Alaska, British Columbia, Washington, and at San Nicolas Island in the southern California Bight. A remnant population occurs in central California (Estes, 1990a).

Most sea otter populations are either stable near carrying capacity or increasing. None are known to be declining, although there have been localized declines following the initial attainment of equilibrium density. Several populations in Alaska, British Columbia, and Washington, which are below carrying capacity and for which an adequate time series of surveys is available, are increasing at or near the species' theoretical maximum (r_{max}) of 17–20% yr^{-1}. The population in California is increasing at a rate of about 5% yr^{-1} (Estes, 1990b, R. J. Jameson & J. A. Estes, unpubl. data). The depressed population growth rate of sea otters in central California appears to be a result of elevated mortality in pre-weaning pups and prime-age females (Riedman *et al.*, 1994). The cause of death in these animals is largely unknown.

Conservation issues for sea otters vary in different regions. Recent analyses of mt-DNA indicate genetic differences among populations in the Kuril Islands, Prince William Sound, and central California (Sanchez, 1992), thus emphasizing the need to conserve local populations. The California sea otter population is legally "threatened" under the US Endangered Species Act, largely because of concerns over the impact of oil spills. These concerns were heightened following the *Exxon Valdez* spill in Prince William Sound which (1) spread over an area far exceeding the current range of the California sea otter, (2) probably killed more otters than presently occur in the California population, and (3) proved to be unmanageable in terms of either protecting wild otters or rehabilitating oiled ones. A recovery strategy (i.e., the establishment of a delisting criterion) is presently being developed by the Southern Sea Otter Recovery Team. The recommended strategy will seek to establish a sufficiently large population range and abundance so that an oil spill, comparable in size to that of *Exxon Valdez*, will have a <10% probability of reducing the population below an effective population size (N_e) of 500.

Chronic threats to sea otters include environmental pollutants and habitat degradation, exploitation in a developing fur market, and a variety of problems associated with fishery conflicts. Detrimental effects of pollutants and habitat degradation, though presently unsubstantiated, are of concern because of (i) increased human use of coastal zones and (ii) recent information on alarmingly high levels of PCBs and DDT/DDE in sea otters from California and Alaska (Bacon *et al.*, 1993). High levels of PCBs and DDE in California sea otters are not surprising because of the prevalence of these materials in the California Current ecosystem.

However, comparably high levels in the remote and ostensibly pristine western Aleutian Islands is surprising in view of the remarkably low levels in sea otters from southeast Alaska. These findings highlight the threat of environmental contaminants to populations of marine-living otters (and other organisms) in remote and otherwise secure parts of the world.

Although sea otters have been protected from exploitation, harassment, and other forms of "take" for most of this century, there is developing interest by Alaska natives in establishing a fur market. The take of sea otters by Alaska natives, largely ungovernable under current US law, has increased dramatically in southeast Alaska over the past several years. The US Fish and Wildlife Service and conservation organizations presently are working with Alaska natives in an effort to regulate the kill. Poaching is a growing problem in Russia's Kuril Islands and Kamchatka Peninsula (S. Burdin, pers. comm.). This problem, apparently driven largely by a declining regional economy, is exacerbated by the effective absence of legal protection for sea otters in remote areas.

The third and potentially most severe threat to sea otters stems from a collection of problems associated with high human use of coastal environments. These productive habitats support diverse fisheries that both threaten and are threatened by sea otters. For instance, entanglement mortality from a set-net fishery in central California was apparently responsible for sending the California sea otter population into a period of decline from the 1970s to the early 1980s (Estes, 1990b). Prior to that period, the expanding population significantly impacted commercial and recreational fisheries (Estes & VanBlaricom, 1985; Wendell *et al.*, 1986), and anticipated range expansion remains a matter of debate and concern. The impact of shellfisheries on sea otters through exploitation competition is unknown, as are other kinds of human use of the coastal environment (e.g., boating, fishing, diving, surfing, jet skis, to name a few).

Chungungo (*Lutra felina*) This exclusively marine-living species ranges from south-central Peru to the Cape Horn region. Although considered by most authorities to be threatened with extinction (Chéhebar, 1990), the current status of the chungungo is poorly documented and largely unknown. These animals are rare from central Chile northward through Peru although there are conflicting reports on their abundance from Chiloe Island southward through the Chilean archipelago. The chungungo is listed in IUCN's Red Data Book.

Purported threats include illegal fur harvesting, fisheries conflicts, and habitat destruction in the form of deforestation, mining, and pollution of the coastal environment. As is so often true, the existing or potential effects of these perceived threats, although probably real, are poorly documented.

Aside from laws and international treaties prohibiting the take or trade of this species, there are no known programs aimed at conserving the chungungo. The most urgent conservation need is for proper documentation of distribution and trends, both regionally and throughout the species' range. Until these basic population measures are available, little can be done in the way of conservation or conservation planning.

Southern river otter (*Lutra provocax*) The distribution of this species in marine habitats is similar to that of the chungungo, at least in the southern Chilean archipelago. Southern river otters also occur in the rivers and lakes of southern Chile and southwestern Argentina. Apparently the chungungo prefers exposed outer coast habitats whereas southern river otters occur in more protected waters.

So far as is presently known, threats to and conservation needs for this species are similar to those of the chungungo. Virtually no published information exists on this species in the marine environment.

Cape clawless otter (*Aonyx capensis*) This species, although broadly occurring in the lakes and streams of subsaharan Africa (Rowe-Rowe, 1990), enters the sea only in the productive Benguela Current region of southern and southeastern South Africa. The Tsitsikamma Coastal National Park is an important conservation area. Marine-living populations of clawless otters apparently require fresh water. Despite reported densities of 0.5 otters/km of shoreline (Arden-Clarke, 1986; van der Zee, 1982; Verwoerd, 1987), the abundance and status of marine living populations of the cape clawless other is undocumented and largely unknown. Exploitation for fur and fisheries conflicts apparently are not significant problems for this species.

North American river otter (*Lutra canadensis*) This species ranges across North America, from the southern United States to northern Canada and Alaska (Polechla, 1992). It occurs in the ocean in cold-temperate to subarctic habitats of both the Pacific and Atlantic coasts. In the North Pacific it occurs from northern California to the eastern Aleutian Islands, and in the north Atlantic from about Cape Cod to Nova Scotia. Although common in coastal waters of the North Pacific, particularly from Puget Sound northward, little is known about the abundance and trends of marine populations. The closely related *L. longicaudis* has been reported from marine habitats in southern Brazil (about 28°S. lat.) (Blacher, 1987).

North American river otters are exploited for their fur in many areas, including the coastal habitats of British Columbia and Alaska. Pollution and other forms of habitat destruction have eliminated river otters from certain freshwater habitats (Polechla, 1992) although the impact of these factors on marine populations is unknown. Like other lutrines, marine-living populations of North American river otters are vulnerable to oil spills. The only published information on oil-related impacts to this species is from the northeast Gulf of Alaska following the *Exxon Valdez* spill (Bowyer *et al.*, 1993; Duffy *et al.*, 1993). Whereas these studies indicate that the spill did not cause immediate catastrophic population declines, they did show or suggest (1) changes in blood chemistry from spill-induced pathologies, (2) reduction in body mass, (3) reduction in dietary diversity, and (4) increased home range size.

Eurasian otter (*Lutra lutra*) This species occurs in lakes and rivers across Eurasia and North Africa (MacDonald, 1992). Much like the North American river otter, it ranges into the sea only at high latitudes where cold, nutrient rich waters occur nearshore. Marine living populations occur in the eastern North Atlantic Ocean from Norway to southern Portugal. The distribution of marine-living populations on the coast of Asia is more poorly known, although they are reportedly common in the Kuril Islands, the Sea of Okhotsk, and Kamchatka (A. Burdin pers. comm.).

Freshwater populations of Eurasian otters have been reduced or eliminated in several areas, apparently because of pollution, habitat destruction, and possibly overexploitation (Chanin, 1985; Mason & MacDonald, 1986). In contrast, marine populations appear to be thriving in many parts of western Europe, especially in Scotland and Ireland. Nonetheless, chronic effects from pollution possibly are the major long-term threat to marine living populations of Eurasian otters. Oils spills are a specific concern although there is no evidence that more than a few animals were killed directly by the recent spill of the T/V *Braer* in the Shetland Islands. Subsequent research, however, indicates striking reductions in fish populations (the otter's main prey) as well as the abandonment of holts within the spill zone (Conroy, *in press*).

Discussion

Except for sea otters in the North Pacific and Eurasian otters in the northeast Atlantic oceans, there is little published information on marine living otter populations and programs for the conservation of these animals are virtually non-existent. In several areas at least, the status of marine otter populations seems more secure than that of their freshwater-living counterparts. This conclusion is based largely on the high densities of north American and Eurasian otters in the northeast Pacific and Atlantic oceans, and the stable or growing populations of sea otters in the North Pacific. Despite this seemingly optimistic situation, programs are needed for the long-term conservation of marine living otters.

The most fundamental requirement for the conservation of marine otters is reliable information on trends in population size and distribution. Even though marine living populations of otters may be abundant when compared with their freshwater-living counterparts, this won't persist for long if they are in decline. In almost no case are there programs in place or information available to make such assessments. Long-term monitoring of populations and habitats is necessary to assess both gradual trends and impacts of short-term catastrophes.

Pollution is among the most insidious and poorly documented of potential threats to marine otters. Water-borne contaminants tend to accumulate in the sea, especially nearshore where marine-living otter populations are found. These materials are transported via atmospheric and oceanic convection so that populations in remote areas are not necessarily safe from their harmful influences. Other than localized oil spills, direct evidence for the harmful effect of pollutants on any species or population of marine otter is lacking. However, this may be because we have not looked closely enough. Water-borne pollutants have detrimentally affected freshwater-living otters, and in the few areas where people have looked, levels of these compounds are surprisingly high in marine-living species and populations.

Human exploitation is another existing or potential threat to marine otters, especially in the Third World and other economically depressed regions. The vast and remote areas in which otters live usually make the implementation of laws and regulations virtually impossible. Controls on international transport and the markets for products made from otter skins are useful adjuncts for protecting otters from human exploitation.

In contrast with many terrestrial carnivores, including most freshwater-living otters, marine otters give the general appearance of being secure from the threat of extinction. This perception derives from (1) the existence of locally abundant populations, (2) a lack of concrete information on population declines, and (3) the widely held view that coastal marine habitats at high latitudes are largely free from the same destructive forces that have led to the extinction or endangerment of many species living in freshwater or on land. These

perceptions, however, are not reassuring. The absence of information on population declines does not mean that declines do not exist, and the perception of coastal zones as pristine, healthy environments that offer a secure haven for otters may be incorrect. It is also important to recognize that the existence of locally abundant populations today is not assurance that they will persist into the future. The fate of species like the California grizzly bear makes this point all too clearly. As Mace & Lande (1991) put it, just as rare species are not necessarily at risk, species at risk are not necessarily rare.

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